

NOTE ON VENEZUELAN FRESHWATER RED ALGAE

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ABSTRACT — The freshwater red alga *Thorea riekei* Bischoff (Thoreaceae, Nemaliales, Florideophyceae) described in 1965 and known hitherto only from Texas (U.S.A.) is reported again from eastern Venezuela (South America) thus enlarging considerably the geographical range extension of this species. Morphological and reproductive aspects of the Venezuelan material are described and compared with the original description from Texas.

RÉSUMÉ — L'algue d'eau douce *Thorea riekei* Bischoff (Thoreaceae, Nemaliales, Florideophyceae) décrite en 1965 et connue seulement du Texas (U.S.A.), a été retrouvée à l'est du Venezuela (Amérique du sud), élargissant ainsi considérablement la distribution géographique de cette espèce. Le matériel du Venezuela est comparé à la description princeps. (traduit par la rédaction)

KEY WORDS : freshwater red algae, *Thorea riekei*, Thoreaceae, Rhodophyta, morphology and reproduction.

The object of this note is to record the occurrence of another species of *Thorea*, *T. riekei* Bischoff (Thoreaceae, Nemaliales) from Venezuela. The only other species of *Thorea* recorded so far from Venezuela (DE TONI, 1895) is the cosmopolitan *T. ramosissima* Bory. Since its original collection and description from Texas, U.S.A., *T. riekei* Bischoff (1965) does not appear to have been reported from anywhere else.

Venezuelan plants of *T. riekei* grow up to a height of 15 cm, are dark brown in color and are mostly unbranched (Fig. 1), or sometimes with a few, irregularly arising branches (Fig. 1, top left). The alga grows attached to rocks by an indistinct base, from which arise one to several cylindrical erect axes. Structurally, each axis is made up of two distinct regions : (i) a central or medullary part made up of irregular and colorless cells (Fig. 4) and (ii) an external or cortical region made up of photosynthetic or assimilatory filaments arising nearly perpendicular to the medulla (Fig. 2). Although the width of the medulla

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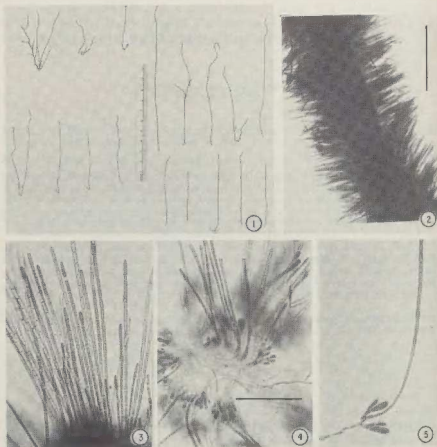


Fig. 1-5 : *Thorea riekei* Bischoff. — Fig. 1 : Habit of several plants, the one at top left showing sparse irregular branching. Fig. 2 : Part of thallus enlarged to show differentiation into an inner medulla and an outer photosynthetic layer. Scale bar = $400\text{ }\mu\text{m}$. Fig. 3 : Group of photosynthetic filaments. Scale bar = $100\text{ }\mu\text{m}$ for figs. 3, 4 & 5. Fig. 4 : Squashed preparation to show the colorless medullary filaments, monosporangia and assimilators. Fig. 5 : An assimilator with young and mature monosporangia at its base.

varies from $140\text{--}220\text{ }\mu\text{m}$ in the various plants examined, there is little or no appreciable variation in the medulla width from the base to the apex in the same plant.

Photosynthetic filaments are made up of 20-45 cells, generally rectangular in shape, each cell $7\text{--}27\text{ }\mu\text{m}$ long and $6\text{--}12\text{ }\mu\text{m}$ wide. The whole thallus has a width range from $500\text{--}1000\text{ }\mu\text{m}$. All the photosynthetic filaments in the nume-

rous slides examined are always unbranched (Fig. 3, 4, 5). Monosporangia are produced at the periphery of the medulla and at the base of the photosynthetic filaments (Fig. 4, 5). Monosporangia are oval to pyriform with a thick wall, are produced singly or in groups of 3-5 and are borne on a short 2-3 celled lateral (Fig. 5). Developing and mature monosporangia vary from 15-21 μm long and 10-15 μm broad. Frequently there is proliferation of new monosporangia within the original sporangia wall.

The alga was collected growing attached to immersed rocks and stones in shaded areas, but with swift water currents in a shallow spring fed stream, which is located inside a private farm at Mapurite, 13 km northeast of Cocollar, near Cumanacoa, Montes District, Sucre State, Venezuela. Based on three collections made during different months (18.v.82; 23.ix.82 & 4.ii.83), it appears that the alga is present throughout the year with apparently no seasonality. All the three collections showed abundant monosporangia, which are the only of reproductive structures observed.

Duplicate specimens are deposited in the following herbaria : Department of Marine Biology, Institute of Oceanography, Universidad de Oriente, Cumaná, Venezuela. Department of Botany, University of California, Berkeley, California; the Smithsonian Institution, Washington, D.C., U.S.A. and Laboratoire de Cryptogamie, Muséum, Paris, France.

Following the key and the comparative table for the most completely described species of *Thorea* (BISCHOFF, 1965; PUJALS, 1965), the Venezuelan plants are identifiable with *T. riekei* described from Texas. Three distinctive features like (i) generally unbranched or only sparsely branched erect axes (ii) always unbranched photosynthetic filaments and (iii) more or less uniform width of the medulla from the base to the apex are common to the Texan and Venezuelan plants. However, the Venezuelan plants are different in the following two respects : plants of *T. riekei* from Texas are up to 30-50 cm long (one specimen up to 1 m long), and medulla approximately 275 μm broad (BISCHOFF, loc. cit.) while the Venezuelan plants are only up to 15 cm long and medulla width varies from 140-220 μm across. These differences in our opinion, are probably variations in populations of the same species growing in two different geographical latitudes with differing environmental conditions. More importantly, the Venezuelan plants do not appear to possess sufficiently distinctive anatomical or reproductive features to warrant their recognition as different from the Texas population. Externally and internally, *T. riekei* is quite different from *Thorea ramosissima*, which is the only species recorded so far from Venezuela. Thalli of *T. ramosissima* are usually abundantly branched, thallus width ranging from 3.5 - 6.2 mm and with the axial region decreasing gradually from base to apex. Other important differences between these two species are also summarized in comparative tables by BISCHOFF (1965, p. 116, tab. 1) and PUJALS (1967, pp. 58, 59).

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